

 DEE CRAMER HEATING / COOLING / SHEET METAL <i>Dedicated People. Delivering Quality.</i>	Doc No:	WELDCUTSAFE
	Initial Issue Date:	1/1/2017
	Revision Date:	6/25/2026
WELDING/CUTTING SAFETY PROGRAM	Revision No.	1.0
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Purpose

These written Welding & Cutting Procedures establish guidelines to be followed whenever our employees work with welding and cutting equipment at this company. The procedures here establish uniform requirements designed to ensure that welding and cutting safety training, operation, and maintenance practices are communicated to and understood by the affected employees. These requirements also are designed to ensure that procedures are in place to safeguard the health and safety of all employees.

Scope

This procedure applies to all employees at Dee Cramer, Inc.

Responsibilities

Supervisor/Manager

- Ensure that personnel are trained in welding and cutting tasks.
- Replace any damaged or defective welding and cutting equipment.
- Confirm that fire watch is assigned when necessary.

Safety Department

- Develop and maintain the written Welding & Cutting Procedures.
- Conduct risk assessments for welding and cutting operations.
- Monitor PPE requirements and safe work practices

Employees

- Only use and operate welding and cutting equipment when trained to do so.
- Follow welding and cutting procedures.
- Inspect all equipment and work areas before use and notify Supervisor of any damage or defects.
- Maintain proper housekeeping.
- If assigned as fire watch:
 - Remain on-site during and after welding/cutting operations as required.
 - Monitor for sparks, hot surfaces, and potential fire hazards.
 - Have fire extinguishing equipment readily available.
 - Report any fire incidents immediately.

Compressed Gas

Cylinders Handling, storage, and use of compressed gases around the workplace represent several hazards. Approved practices include but are not limited to keeping valve cap closed at all times when a cylinder is not in use. Use care in handling and storage of cylinders, when hoisting cylinders, secure cylinders in an upright position always. Maintain a distance of at least 20 feet or provide a non-combustible barrier at least five feet high in separating fuel gas cylinders from oxygen cylinders.

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Gas Welding and Cutting

Anytime you work with equipment that produces sparks or an open flame, a process that generates excessive heat, there is a risk of fire. Hot Work can be controlled through a hot work policy; some hot work hazards: fire, property and personal loss, explosions of compressed gases, metal splatter and electrical shock.

Arc Welding and Cutting

Wet conditions, or high humidity check for electric shock concern. Do not dip hot electrode into water. Use of holders, cable and other apparatus specifically designed for the purpose, matched to the job and other components and good repair. Turning off the arc welding or cutting machine when it is not being attended. NEVER use cable with repairs or splices.

Before a regulator to a cylinder valve is connected, ensure fittings are clear of dust or dirt. Stand to one side of the outlet, not in front of it. Make sure sparks, flame or other possible sources of ignition are not present. Open cylinder slowly. Do not place anything on top of fuel gas cylinder when in use. Before regulator is removed from the cylinder valve, always close the cylinder valve directly and release the gas from the regulator. Check with Supervisor prior to any type of welding with questions or concerns regarding usage, area, equipment etc.

Welding Stainless Steel

Welding stainless steel generates hexavalent chromium fumes, which are carcinogenic and can cause respiratory and skin issues.

Preferred methods of welding stainless steel includes:

- GTAW (TIG) for thin materials and precision work
- GMAW (MIG) for thicker materials and faster production

Filler Material:

- Use ER308L or ER316L depending on the grade of stainless steel.

Use local exhaust ventilation (LEV) such as fume extractors with HEPA filters. Position extraction nozzle as close to the weld as possible. For confined spaces use forced air ventilation and monitor air quality.

Respiratory Protection

If LEV is insufficient, welders must wear:

- PAPR (Powered Air-Purifying Respirator) with HEPA filters.
- Half/full face respirators with cartridges rated for metal fumes

Welding Procedure Steps

- Inspect Work Area

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- Ensure proper ventilation and fire safety measures.
- Remove flammable materials.
- Prepare Materials
 - Clean stainless steel surfaces to remove oil, dirt, and coatings.
 - Use stainless steel wire brushes to avoid contamination.
- Set Up Equipment
 - Select correct welding parameters (amperage, voltage, wire feed speed).
 - Confirm shielding gas (typically 100% Argon or Argon/Helium mix).
- Perform Welding
 - Maintain proper travel speed and angle to minimize fume generation.
 - Avoid excessive heat input to reduce Cr(VI) formation.
- Post-Weld Cleanup
 - Allow weld to cool naturally.
 - Clean weld area using stainless steel tools only

Monitoring and Health Surveillance

- Conduct air monitoring periodically to assess Cr(VI) levels.
- Maintain records of exposure and control measures.
- Offer medical surveillance for welders exposed to Cr(VI), including respiratory health checks.

Emergency Procedures

In case of fume exposure move the affected person to fresh air immediately and seek medical attention if symptoms persist. Always report all incidents to the Safety App. (see Incident-Near Miss Investigation Procedure for more information)

Documentation & Compliance

Follow OSHA standards:

- 29 CFR 1910.1026 – Hexavalent Chromium
- 29 CFR 1910 Subpart Q – Welding, Cutting, and Brazing
- Maintain SDS for all welding materials.
- Keep inspection and training records up to date.

See Training section of this program for stainless steel specific training requirements.

Fire Prevention

At all times fire extinguishers will be readily available to all employees and areas where welding and cutting is performed. All welding and cutting operations must be completed in an area that is free of fire hazards such as dust, and debris. All employees must wear flame-resistant clothing, have fire watch in attendance when welding, remove all combustible material 35 feet or more from work area, get a hot work permit and follow safety precautions.

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Fire Watch

Fire watchers are to provide support for welders to help prevent and or contain should a fire break out. A fire watch will be trained in fire hazards and always have a fire extinguisher ready and available. They also must remain at least 1/2 hour after completion of welding or cutting to make sure no smoldering files occur.

Hot Work Permit

A Hot Work Permit is needed prior to any hot work being done outside of the fab shops and on jobsites that have customer specifications. Under the welding and cutting regulations, management is responsible for safe cutting and welding on its jobsites. Cutting and welding shall NOT be permitted in areas not authorized by management, sprinklered buildings, the presence of explosives (mixtures of flammable gases, vapors, liquids or dusts with air), near storage of large quantities of exposed, readily ignitable materials such as sulfur, baled paper or cotton. See attached Hot Work Permit below.

Ventilation

Ventilation will be sufficient to protect both the welder and those in the affected area. No Oxygen shall be used for ventilation. When ventilation is not sufficient to provide clean, respirable air, respirators will be specified according to specifications of our policy. Employees will be trained to know the symptoms of fumes and gases and to leave an area immediately. When applicable atmospheric tests shall be performed.

Personal Protective Equipment

Proper eye protection, helmets, hand shields, goggles, flame resistance aprons will be provided to those welding and cutting. Along with but not limited to proper protective clothing and first aid equipment. When known or unknown toxic materials are present in a job, respirators will be provided.

Flammable, Toxic, or Hazardous Materials

The company will have a competent person to test the Flammability of unknown coatings or obtain information from owner of project. If coating is found to be highly flammable, it will be stripped from the area to prevent fire.

Fall Protection

A welder or helper' working on platforms, scaffolds, or runways shall be protected against falling. This may be accomplished using guard railings, safety harness, or other equally effective safeguards recommended by OSHA/MIOSHA. Welders shall place welding cables and other equipment so that it is clear' of passageways, ladders, and stairways. Maintaining a clear welding or cutting area to prevent slips, trips, or falls

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Maintenance & Inspection

Always inspect all tools and equipment prior to welding operations. Any deficiencies found in our welding and cutting equipment are repaired, or defective parts replaced, before continued use. However, no modifications or additions that affect the capacity or safe operation of the equipment may be made without the manufacturers' written approval. If such modifications or changes are made, the capacity, operation, and maintenance instruction plates, tags, or decals, must be changed accordingly. In no case may the original safety factor of the equipment be reduced.

While defective parts may be found, we prefer to invest time and effort into the proper upkeep of our equipment, which results in day-to-day reliability. Keeping up with the manufacturer's recommended maintenance schedules, and completing the proper records, increase our welding and cutting equipment's longevity.

The Shop Superintendent and Operations Manager: order, receive, review, and inspect along with manufacturer representative on all new and repaired equipment complete a receiving or delivery inspection whenever our company purchases welding and cutting equipment.

Shop Superintendent along with employees working on specific machine follows the manufacturers operator instruction manual for daily or weekly maintenance.

Periodic maintenance (those completed monthly or less frequently) is done by a factory-trained expert, or a dealer.

Training

It is the policy of Dee Cramer Inc to permit only trained and authorized personnel to operate welding and cutting equipment. All welding training is done by the local unions Joint Apprenticeship Training Committee program. This organization has the necessary knowledge, training, and experience to train new welding and cutting equipment operators. Trainers' qualifications include certified welding instructor Sheet Metal Workers International Association Accreditation and Journeyman Status

All welding and cutting trainees are tested on the equipment they will be operating, and given welding certification and Journeyman certification.

All employees have a general obligation to work safely with and around welding and cutting operations.

Stainless Steel Welding

All welders working on stainless steel must receive training on:

- Hazards of hexavalent chromium
- Proper PPE and ventilation systems
- Emergency procedures and first aid

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Management of Change		
Date	Description of Change	Name
2/12/2013	Created document for Dee Cramer, Inc.	Valerie Bradley
3/09/2024	Full review. Clerical changes	Jim Spaulding
5/13/2026	Created and added Hot Work Permit	Jim Spaulding
6/25/2026	General process flow updates	Madelyn Nichols

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HOT WORK PERMIT (OSHA & NFPA 51B COMPLIANT)

1. General Information

Permit Number: _____

Date Issued: _____

Valid From / To: _____

Exact Work Location: _____

Building/Area/Unit: _____

2. Description of Hot Work

☐ Welding ☐ Cutting ☐ Grinding ☐ Brazing/Soldering ☐ Open Flame Work ☐ Other:

Scope of Work:

3. Personnel & Responsibilities

Hot Work Operator: _____

Supervisor / Permit Authorizing Individual (PAI): _____

Fire Watch: _____

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4. Hot Work Area Classification

☐ Designated Hot Work Area ☐ Non-Designated Area

5. Hazard Assessment

Flammable liquids/vapors: ☐ Yes ☐ No Controls: _____

Combustibles within 35 ft: ☐ Yes ☐ No Controls: _____

Combustible dusts: ☐ Yes ☐ No Controls: _____

Confined space: ☐ Yes ☐ No Controls: _____

6. Required Precautions

Area Preparation: ☐ Combustibles removed ☐ Openings covered ☐ Shields in place

Fire Protection: ☐ Extinguisher available ☐ Fire Watch assigned ☐ Sprinklers active

Equipment Safety: ☐ Equipment inspected ☐ No leaks ☐ Cylinders secured

7. Fire Watch Requirements

Fire Watch Name: _____

Start Time: _____

End Time: _____

8. Authorization

Permit Authorizing Individual Signature: _____

Date/Time: _____

9. Work Completion & Closeout

Completion Time: _____

Final Inspector: _____